

P-5.3 Analyze wave behaviors (including reflection, refraction, diffraction, and constructive and destructive interference).

Revised Taxonomy Level 4 Analyze conceptual knowledge

In physical science students

- ❖ “Summarize reflection and interference of both sound and light waves and the refraction and diffraction of light waves.”(PS-7.6)

It is essential for students to

- ❖ Understand both conceptually and analytically the factors that affect the behaviors of a wave
- ❖ Students should be able to summarize each behavior in terms of
 - The physical effect that each behavior has on the wave
 - The factors which influence each behavior
 - The ways that each behavior is measured
 - The accepted ways of illustrating each behavior.
 - The mathematical relationship between or among the behaviors
 - The difference in the way that the behavior is manifested in transverse and longitudinal waves.

Assessment

The revised taxonomy verb for this indicator is analyze which means to “break material into its constituent parts and determine how the parts relate to one another and to an overall structure or purpose”. In this case, students should be able to evaluate all wave behaviors and address the ways that they influence one another. Because the indicator is written as conceptual knowledge, assessments should require that students understand the “interrelationships among the basic elements within a larger structure that enable them to function together.” In this case, assessments must show that students understand the reasons for the ways that the behaviors affect one another both mathematically and physically.